SUPERFUND SITE PRELIMINARY CLOSEOUT REPORT

SYNTEX FACILITY - VERONA SITE

VERONA, MISSOURI

SYNTEX FACILITY - VERONA SITE
VERONA, MISSOURI
PRELIMINARY CLOSEOUT REPORT

I. INTRODUCTION

This Preliminary Close Out Report documents that the U.S. Environmental Protection Agency, Region VII (EPA), completed construction activities for operable units one and two (OU1 and OU2) at the Syntex Facility - Verona site in accordance with Procedures for Completion and Deletion of National Priorities List Sites and Update (OSWER Directive 9320.2-3C). The EPA and the Missouri Department of Natural Resources (MDNR) conducted a final inspection of OU1 on January 22, 1998, and determined that the contractors have completed the remedy in accordance with remedial design plans and specifications, and no further construction activities are anticipated for either OU1 or OU2. EPA and the State have initiated the activities necessary to achieve site completion.

II. SUMMARY OF SITE CONDITIONS

Background

The former Syntex Agribusiness, Inc. (Syntex) facility is located west of the city of Verona, in south-central Lawrence County in southwest Missouri. The facility occupies approximately 180 acres, primarily along the east bank of the Spring River, which flows northward through the length of the property (See figure 1).

Most of the active portion of the facility is located within protected areas of the 100 year Spring River flood plain. The area is characterized by karst topographic features such as solution cavities and springs.

The industrial facility is surrounded on three sides by property used for agricultural purposes. To the east of the site are the residential areas of the city of Verona. Scattered residences are located within the Spring River flood plain down gradient from the site. The Spring River is used for recreational and industrial purposes within southwestern Missouri.

The site also has an active plant which produces food additives for human and animal foods and is an active Resource Conservation and Recovery Act (RCRA) facility. The production plant was sold by Syntex in the fall of 1996 to a Dupont/Con Agra conglomerate identified as DuCoa, L.P. Syntex maintained ownership of certain portions of the site, including the Trench area, and also maintained the environmental responsibility for all actions associated with the Superfund site.

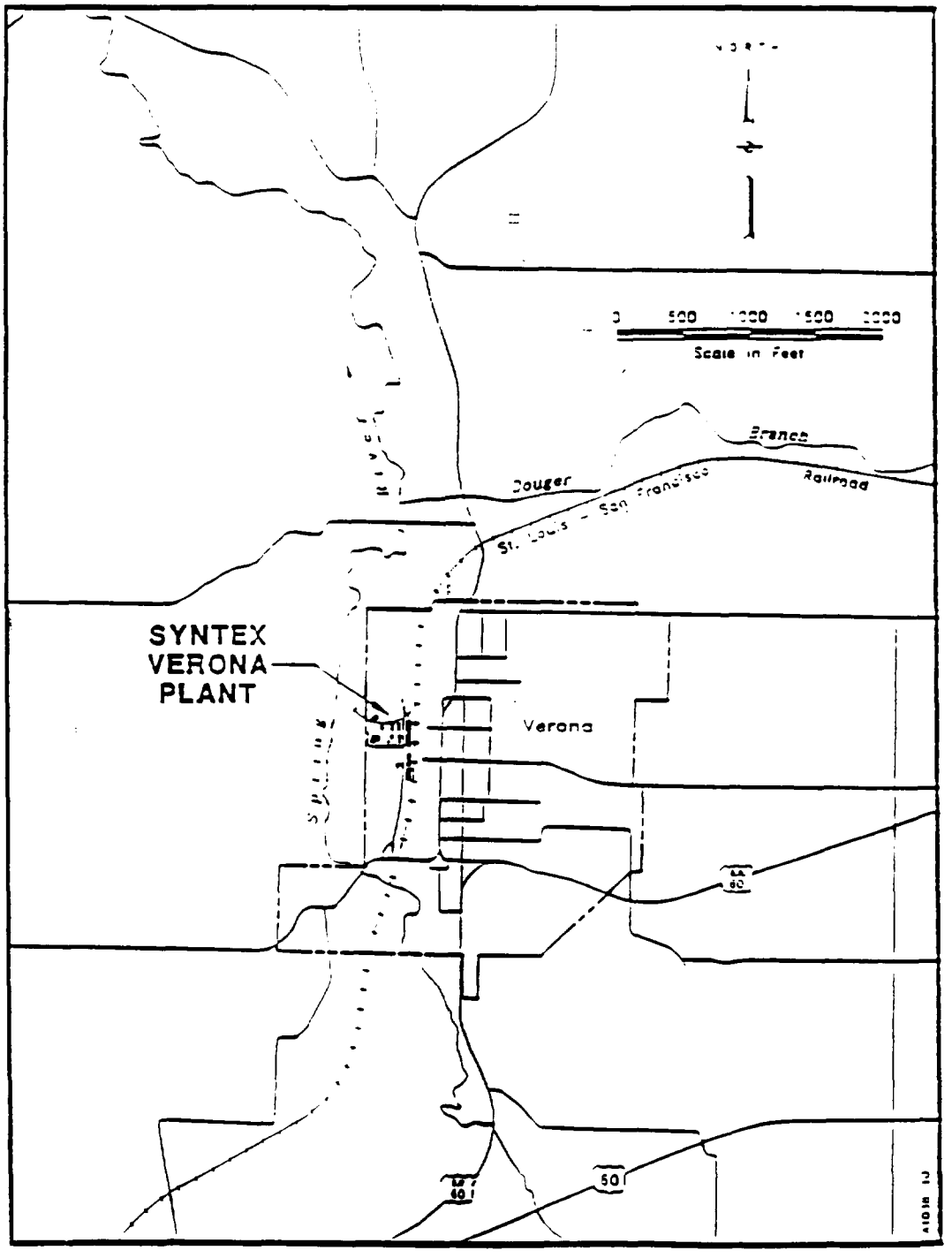

Figure 1. Site Location Map

In the 1960's, Hoffman-Taff, Inc. owned and operated the facility. Hoffman-Taff produced 2,4,5 Trichlorophenoxy-acetic acid (2,4,5-T) for the U.S. Army as part of the production of the defoliant commonly known as Agent Orange. In 1969, Hoffman-Taff leased a portion of the building at the facility to Northeastern Pharmaceutical and Chemical Company (NEPACCO) for the production of hexachlorophene. In 1969, Syntex purchased the facility at Verona from Hoffman-Taff.

The production of 2,4,5-T and hexachlorophene involved the intermediate production of 2,4,5-Trichlorophenol (TCP) and the formation of 2,3,7,8 tetrachlorodibenzo-p-dioxin (dioxin). In the course of purifying the hexachlorophene, still bottom wastes were created which would have collected the TCP and dioxin. These waste streams were managed in storage tanks and lagoons onsite.

Site Cleanup, Planning, and Construction Activities

A preliminary assessment of the site was conducted by the EPA in November 1980. In November 1981, EPA conducted a site investigation and collected ground water, soil, and sediment samples. Dioxin, volatile organic compounds (VOCs), and semi-volatile organic compounds were detected in the soil, sediment, and ground water samples. The site was proposed for the National Priorities List (NPL) on December 30, 1982 (Federal Register Volume 47, Number 251). On September 8, 1983, the NPL designation became final (Federal Register Volume 48, Number 175). The principal threats posed by the site were direct contact (ingestion, inhalation and dermal) with dioxin contaminated soil and wastes by humans and wildlife. The dioxin contaminated soils, liquids, and sludges were also a source for ground water and surface water contamination.

Pursuant to an Administrative Order on Consent entered into by EPA and Syntex in September 1983, Syntex agreed to perform certain response actions including investigating the nature and extent of the contamination at the site, identifying feasible alternatives to address the contamination at the site, and developing an implementation plan to address the contamination at the site. Over the next few years Syntex implemented the actions identified in the Order.

The remedial investigation/feasibility study (RI/FS) was performed by Syntex between 1983 and 1988. During this time, EPA divided the site into two separate operable units. The first operable unit (OU1) addressed all known contaminated soils and equipment at the site. Operable unit two (OU2) addressed the contamination in the ground water and surface water. The RI/FS completed in 1988 covered OU1 and determined that soils and equipment were contaminated with dioxin above levels of concern for protection of human health and the environment. A Record of Decision (ROD) was issued by EPA in May 1988 approving a final remedy for OU1. The remedial action for OU 1 included the excavation of soils contaminated with 2,3,7,8 tetrachlorodibenzo-p-dioxin (dioxin or TCDD) above a 20 part per billion (ppb) action level, decontamination and disposal of dioxin-contaminated equipment, thermal treatment of excavated soils and cleaning solutions, establishment and maintenance of a vegetative cover

over areas exceeding 1 ppb dioxin, installation of a vegetative clay cap over the Trench area and installation of a gravel drainage-interceptor trench up gradient of the Trench area.

Construction activities for operable unit one were initiated in May 1988, with the excavation of dioxin contaminated soils at four former storage areas within the Spring River flood plain (See figure 2).[1] The four areas included the Burn area, the Irrigation area, the Lagoon area and the Slough area. Approximately 860 cubic yards of dioxin contaminated soil was transported to the EPA Mobile Incineration System, located at the James Denney Farm site near McDowell, Missouri and thermally treated. The excavated areas were then backfilled with clean topsoil and a vegetative cover was established. Remediation of these contaminated soils was completed in 1989.

Dioxin contaminated soils located in the Trench area on bluffs west of the Spring River were capped in place with a 12-inch clay cap covered by a topsoil layer which supports a vegetative cover. In addition, a gravel drainage interception trench was installed up gradient from the trench area to restrict contaminant migration. Five ground water monitoring wells were installed around the Trench area for post soil remediation ground water monitoring. The monitoring well configuration consisted of an up gradient well (MW-11), two down gradient wells (MW-17, MW-18), and two flanking down gradient wells (MW-12, MW-13). Wells MW-17 and MW-18 were completed in bedrock and screened across the alluvium/bedrock contact. The original activities associated with the Trench area were completed in 1989. In 1996, additional work was initiated to replace several wells around the Trench area as well as install new wells in order to improve the information regarding the ground water around the Trench area. Wells MW-12, MW-13, and MW-17 were replaced with closely located similar wells. Well MW-18 was modified and two new wells were installed. Well MW-19 was installed as a new down gradient well and well MW-20 was installed as a new up gradient well. There are now seven wells surrounding the Trench area (MW-11, MW-12, MW-13, MW-17, MW-18, MW-19 and MW-20) (See figure 3). The wells will be maintained in perpetuity by Syntex and annual ground water monitoring will be conducted. The most recent results of sampling of these wells did not indicate any problems with the ground water in the Trench area.

An eight foot chain link fence was erected around the perimeter of the site to ensure restricted access and prevent trespassers from entering the site. Land use restrictions have been placed on the title to the facility's property to maintain the industrial use status. These actions have greatly reduced the likelihood of unacceptable exposure to hazardous substances which remain in the soils at the site.

The State of Missouri has also implemented institutional controls on the site limiting changes in land use by placing the site on a State registry. The Syntex Verona site has been placed on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal

---

[1] Syntex performed all construction activities with EPA and MDNR oversight.

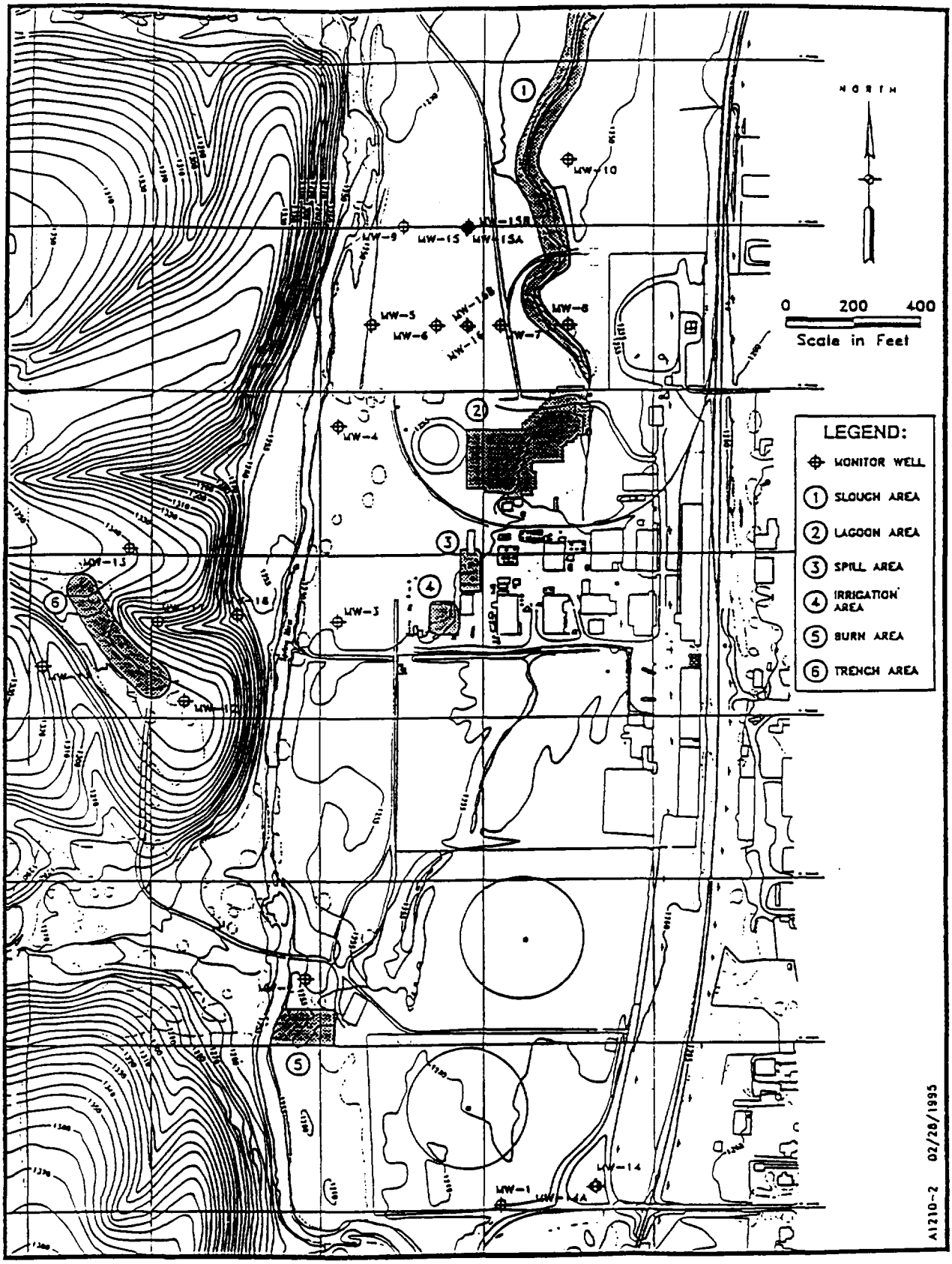

Figure 2 Major Areas of Dioxin Surface Contamination, Syntex Verona Facility

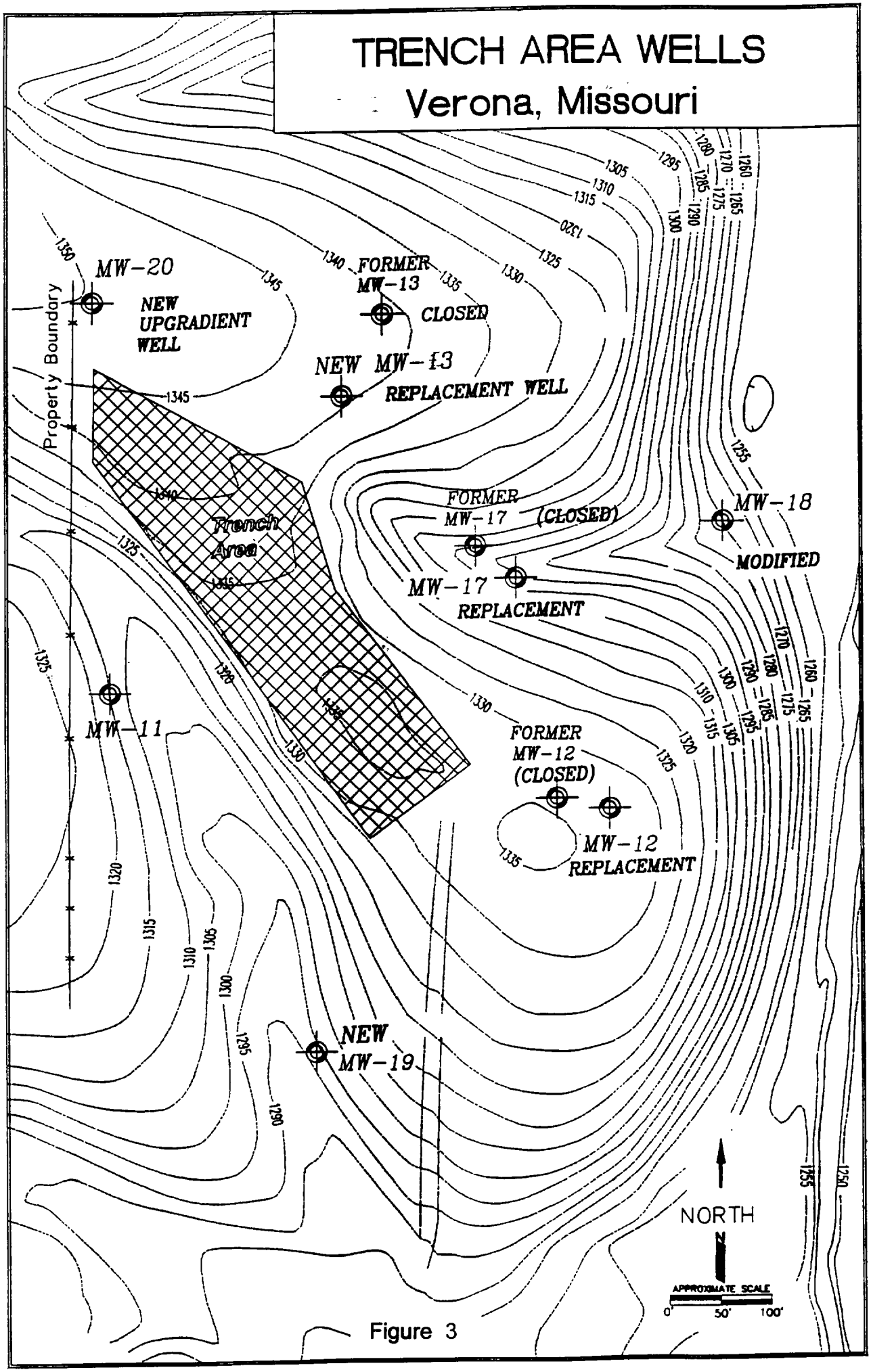
TRENCH AREA WELLS
Verona, Missouri
MW-20
NEW UPGRADIENT WELL
FORMER MW-13
CLOSED
NEW MW-13
REPLACEMENT WELL
Property Boundary
French Area
FORMER MW-17 (CLOSED)
MW-17
REPLACEMENT
MW-18
MODIFIED
MW-11
FORMER MW-12 (CLOSED)
MW-12
REPLACEMENT
NEW MW-19
NORTH
APPROXIMATE SCALE
0'
50'
100'

Figure 3

Sites in Missouri as the "Syntex Facility (Verona) Site". The site is currently classified on the Registry as a Class "II" site, priority 11, meaning it is the eleventh priority of the class II sites. Class II sites are sites that are a significant threat to the environment where action is required. Missouri Code section 260.465 describes the authority of the Missouri Department of Natural Resources with respect to use and transfer of sites on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites. There are no specific restrictions for this site. In summary, a person shall not substantially change the manner in which a Registry site is used or sell or transfer title of a Registry site without written approval of the Director of the Missouri Department of Natural Resources.

Decontamination procedures were developed to clean the contaminated NEPACCO and photolysis equipment. An explanation of the treatment methods used on the dioxin contaminated equipment at the Verona site are found in Appendix 11 to the Implementation Plan for OU1. This implementation plan was an approved attachment to the 1983 Consent Agreement between EPA and Syntex.

The treatment methods varied for different types of contaminated equipment. In general, a combination of detergent washes and/or steam cleaning were done on the debris, followed by hexane or phosphoric acid rinses, then followed by detergent and clean water rinses. Some of the smaller equipment was completely immersed in a phosphoric acid bath. After completion of the decontamination, all of the equipment was wiped tested for dioxin. Approximately 75% of the equipment was treated by 1990 when problems occurred with disposal of the decontaminated equipment. The land disposal restrictions raised issues concerning the methods and ability to dispose of materials contaminated with listed wastes like dioxin. Several avenues were investigated regarding how the decontaminated equipment could be properly disposed. In 1996, a determination was made by EPA, under the hazardous debris rule, that the developed procedures would adequately protect human health and the environment and allow the treated equipment to be disposed as a solid waste. The remainder of the equipment was properly treated and all of the equipment was disposed in 1997. The treatment areas and dikes were decontaminated by the end of 1997.

In August 1992, the EPA completed a remedial investigation of the ground water and surface water at the facility. A ROD was signed for OU 2, in May 1993, addressing the ground water and surface water at the site. The decision consisted of no further action with regard to the ground water or surface water except continued monitoring. New ground water monitoring wells and surface monitoring stations would be installed and two years of ground water and surface water monitoring would be conducted. At the completion of the two years of monitoring another assessment of the risks due to the ground water contamination would be performed. In May 1996, EPA approved an implementation plan for OU2 prepared by Syntex for performance of monitoring activities for the ground water and surface water.

All equipment and debris were removed from the Spill area and the area was covered with an asphalt cap in 1995. Equipment and debris had been stored in this area pending the

resolution of the disposal problems with the decontaminated equipment. No excavation was required in this area because the concentration of dioxin contamination was below the 20 ppb action level. The original plan called for a vegetative cap, but the owner wished to use the area for parking and movement of vehicles and equipment so an asphaltic cap was substituted. EPA and the State agreed that this cap would be as protective as a vegetative cap. The cap will be maintained in perpetuity.

In March 1997, while performing decontamination procedures on an exterior concrete dike (the former T-1 dike) located in the Spill area of the Site, dioxin contamination was discovered in soils surrounding the dike. The soils contaminated with dioxin above a 20 ppb concentration were excavated and transported to a commercial incinerator in Coffeyville, Kansas for thermal treatment. This work was conducted in conjunction with a removal action to address polychlorinated biphenyl (PCB) contamination in soil discussed later in this report. The excavated areas were backfilled with a minimum of one foot of clean fill dirt and capped with an asphaltic cover. These actions were completed in December 1997.

In April 1997, as part of a trenching operation near a small electrical building in the Spill area of the Site, soil was excavated for the purpose of burying elevated power lines. Since the electrical building had historically stored PCB transformers and leaks from the transformers had occurred, a composite sample was taken of the excavated soil to determine the presence or absence of PCB contamination. Analysis of the soil sample indicated the presence of PCBs at 1000 parts per million. In response to the discovery of PCB contamination, EPA issued a Removal Action Memorandum on July 17, 1997, identifying the response actions necessary to address the PCB contamination.

The EPA and Syntex entered into Administrative Order on Consent to complete ground water and surface water monitoring activities and PCB removal activities in July 1997. Between August and November 1997, Syntex completed installation of the new ground water monitoring wells and surface water monitoring stations. In November 1997, the first round of quarterly ground water and surface water monitoring was completed for OU 2. The construction activities for excavation of the PCB and dioxin contaminated soils was initiated in August 1997 and completed in December 1997. Over 300 tons of contaminated material was excavated and transported to the incinerator in Coffeyville, Kansas for treatment. This completed all physical construction activities for the site.

Community Relations Activities

Community relations activities at the site have been largely uneventful. This is probably due in part to the fact that the site is located in a very rural area, as well as the coordination between EPA, and the State. Also, the State of Missouri and EPA have coordinated closely and responded to all inquiries which were received throughout the life of the project.

The EPA has released fact sheets at various phases of the project in order to keep the public informed of the ongoing activities, most recently in August 1992 for OU2 discussing the proposed decision of no further action with regard to the ground water and surface water.

The EPA has also held public meetings at different times during the Superfund process. A public meeting was held in March 1988 to discuss remedial alternatives and remedy selection with the public for the contaminated soils and equipment at the site. The public was generally supportive of what the EPA was doing and wanted to be kept informed of continuing activities. In September 1992, another public meeting was held to discuss the remedy selection for the ground water and surface water operable unit (OU2). Again, the public was generally supportive of EPA activities. The public was not overly concerned by any of the actions.

III. CLEANUP QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Since the completion of the remedial action activities for OU1 a final remedial action report was drafted and is undergoing final review. The report outlines all of the rigorous quality procedures used to assure the response actions were done correctly and in compliance with the ROD for OU1.

Similarly, a remedial action report will be drafted for OU2 after the completion of the remedial action activities for OU2 in June 2000. Again, appropriate quality assurance measures have been and will continue to be used to assure the remedy was in compliance with the ROD for OU2.

EPA has reviewed all groundwater monitoring reports provided by the PRP, Syntex Agribusiness, Inc., and will continue to do so. Since it is anticipated that no action will be taken in regard to the groundwater, the quality assurance/quality control measures needed on this component of the selected remedy are to assure that the monitoring and analysis is being done correctly and that the monitoring wells are in proper condition. The QA/QC for the sampling and analysis activities is more than adequate and the wells were constructed using rigorous QA/QC procedures.

Site visits were conducted in November 1997 and January 1998 with representatives from the EPA and the State of Missouri and all portions of the completed remedy continue to be effective (See Attachment 1).

IV. ACTIVITIES AND SCHEDULE FOR SITE COMPLETION

The activities that remain to be completed for the Syntex Facility - Verona site include conducting two years of quarterly ground water monitoring, performing an additional assessment of the risks associated with any ground water contamination found during the monitoring,

completing a final overall site inspection, finalizing the RA Reports for OU1 and OU2 and preparing a Final Close Out Report. These activities will be completed in accordance with the following schedule:

TASK	ESTIMATED COMPLETION	RESPONSIBLE ORGANIZATION
Approve RA Report OU1	09/30/98	EPA/State
Complete GW monitoring	12/30/99	PRP
Complete Risk Assessment	06/30/00	PRP
Complete Final Site Inspection	06/30/00	EPA/State
Approve RA Report OU2	08/15/00	EPA/State
Approve Final Closeout Report	09/30/00	EPA/State

V. SUMMARY OF FIVE-YEAR REVIEW STATUS

Hazardous substances will remain at the site above health-based levels after the completion of the remedial action. Pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121(c), 42 U.S.C. § 9621 (c), the National Oil and Hazardous Substances Pollution Contingency Plan, Section 300.430(f)(4)(ii) and as provided in OSWER Directive 9355.7-02, Structure and Components of Five-Year Reviews, May 23, 1991, and OSWER Directive 9355.702A, Supplemental Five-Year Review Guidance, July 26, 1994, it is necessary to conduct five-year reviews at the Syntex Facility - Verona site. The initial five year review has been completed and the second five year review will be conducted in 1999.

Michael J. Sanderson
Director, Superfund Division

9/16/98
Date

Attachment 1 - Inspections Reports

ATTACHMENT 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII

DATE: November 14, 1997

SUBJECT: Former Syntex Facility - Verona, Missouri Site Visit

FROM: Steven L. Sanders, Steven R. Sanders
Former Remedial Project Manager
Region 7, U.S. EPA

TO: File

On November 12, 1997, Steven Sanders visited the former Syntex Facility[1] in Verona, Missouri (the site) to witness remedial action activities. The planned activities were to inspect the completed activities for operable unit one (OU 1), to inspect the completed activities for the PCB removal, and to observe ground water and/or surface water sampling for operable unit two (OU 2) at the site. I had developed a punch list for the OU 1 site inspection which is attached.

On Wednesday, I traveled to Verona, Missouri to visit the Site. I arrived at the site at approximately 1:00 PM, where I met with Jerry Foster with the Missouri Department of Natural Resources (MDNR) and Nancy Luxton with Syntex Agribusiness, Inc. (Syntex). The three of us then met with Tom Watts, a contract employee with Syntex, who is overseeing the work at the site. The four of us then began a tour of the site.

In order to conduct a proper inspection of the activities for operable unit one, one needs to inspect the five areas of contamination and the areas where treatment was conducted. The five areas include the Burn area, the Lagoon area, the Slough area, the Spill/Irrigation area and the Trench area. The treatment occurred in the Spill/Irrigation area. The Burn, Lagoon, Slough and Spill/Irrigation areas have been delineated by Syntex with posts and cables surrounding the four areas for easy identification. This was done because these four areas were included in the property which Syntex sold to DuCoa. These areas will require maintenance in perpetuity, which will be performed by Syntex. Syntex maintained ownership of the Trench area and therefore, no such delineation was necessary. We first toured the Burn area and the Trench area.

The caps in the Burn and Trench areas were intact and in good shape with excellent vegetation established. The ground water monitoring wells surrounding the Trench area were in good working order as were all of the ground water monitoring wells observed during this visit. The most recent results of the ground water monitoring of these wells will be attached to the Remedial Action report for OU 1 prepared at the completion of OU 1 activities.

---

[1] The facility is now owned by DuCoa L.P. (DuCoa), a limited partnership between DuPont and Con Agra. DuCoa purchased the facility from Syntex in 1996.

We then proceeded to the south end of the property to observe the newly installed surface water monitoring station (south station) and the ground water monitoring well being used for an up gradient background well. The south station was well constructed and in good shape. The ground water monitoring well to be used for up gradient background monitoring was well IS-6, which was installed as part of the NPDES monitoring. Well IS-6 was in good shape.

Next we went to the Slough area where the soil cap was also in good shape with good vegetation established. Just west of the Slough area is the location of several ground water monitoring wells including two new ground water wells recently constructed and a surface water monitoring station (north station) recently installed near the north end of the property. We inspected the two new ground water monitoring wells and the north station. The two wells and the north station were in good condition. We then witnessed sampling activities at ground water monitoring well 16B. The samplers were bailing and sampling the well. Disposable bailers were being used. The witnessed sampling proceeded with no problems.

The four of us then proceeded to the Spill/Irrigation area. The Irrigation area has a soil cap which is in good condition and well vegetated. The Spill area has an asphalt cap over most of the area which is in very good condition. The building in the Spill area where the contaminated equipment had been treated was still undergoing final decontamination. All areas in the building had been decontaminated except a small area on the floor of the building immediately in front of the doors at the south end of the building. We observed decontamination work being performed on that area of the floor. The last load of decontaminated equipment had been disposed offsite the prior week.

All actions conducted near the Spill area for the PCB removal were complete except the final capping. The contaminated soil had been excavated and disposed offsite. The excavated areas were backfilled with clean fill dirt. The small electrical building had been removed and disposed. Only the placement of the asphalt cap remained, which will be completed in the next few weeks, weather permitting. Adjacent to the PCB contamination was a small area of soil contaminated with 2,3,7,8 tetrachlorodibenzo-p-dioxin (dioxin) which was excavated and disposed concurrent with the PCB contamination. This work was also complete and covered with clean backfill dirt awaiting asphalt capping.

Finally, we proceeded to the Lagoon area where we found the soil cap in good shape with excellent vegetation. The site inspection concluded at approximately 3:15 PM. I left the site at about 3:30 PM and returned to EPA offices in Kansas City that evening.

The remaining activities for completion of the RA for OU 1 are the final decontamination of the area on the floor of the building and the placement of the asphalt cap over the area of soil removal in the Spill area. A final inspection for OU 1 will be conducted upon completion of these activities. The ground water and surface water monitoring being conducted was the first event in a two year monitoring program to be conducted for OU 2. At the completion of the two years of monitoring an assessment will be done to determine if further actions are necessary for OU 2.

cc: Steve Kovac
Bob Feild

PUNCH LIST FOR INSPECTION OF OPERABLE UNIT 1
FORMER SYNTEX FACILITY
VERONA, MISSOURI

Items to inspect/review:

* The caps/covers in the five areas where dioxin contamination is located. The five areas are: Burn Area; Lagoon Area; Slough Area; Spill/Irrigation Area; and Trench Area. all caps in good condition
* The monitoring wells around the Trench area and review most recent ground water data. Monitoring wells in good shape, Syntex will forward GW data and report on new well
* Assure all decontaminated equipment has been removed. -- all equipmt removed last week.
* The building adjacent to Spill/Irrigation area where decontamination of equipment occurred. Still small area of floor to decon.
* The most recent excavation in the Spill area to assure complete.

need to complete asphalt cap

Witnessed GW sampling at well # 16 D

Inspected two surface water locations

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII

DATE: January 26, 1998

SUBJECT: Former Syntex Facility - Verona, Missouri Site Visit
Final Inspection for Operable Unit One.

FROM: Steven L. Sanders, Steven L. Sanders
Former Remedial Project Manager
Region 7, U.S. EPA

TO: File

On January 22, 1997, Steven Sanders visited the former Syntex Facility[1] in Verona, Missouri (the site) to conduct a final inspection of the completed activities for operable unit one (OU 1). I had performed an inspection of the activities on November 12, 1997 and this visit was to assure all outstanding activities were completed.

On Thursday, I traveled to Verona, Missouri to visit the Site. I arrived at the Site at approximately 11:00 AM, where I met with Jerry Foster with the Missouri Department of Natural Resources (MDNR) and Nancy Luxton with Syntex Agribusiness, Inc. (Syntex). The three of us then conducted an inspection of those outstanding activities identified from the November 12, 1997 inspection (see November 14, 1997 memorandum from Steven Sanders to the file).

The remaining activities for completion of the remedial action for OU 1 were the final decontamination of a small area on the floor of the building located in the Spill/Irrigation area and the placement of the asphalt cap over the area of soil removal in the Spill area.

The three of us first inspected area of soil removal in the Spill area. All dioxin and PCB contaminated materials had been excavated and removed and the area was backfilled with clean fill dirt prior to the November 12 inspection. This inspection revealed that a new asphalt cap had been placed over the area of excavation as well as a large area surrounding it, including the former gravel drive area along the spill/irrigation area. The asphalt was in excellent condition.

The treatment building was then inspected. All of the decontamination work was completed and the areas sampled and found to be non-detect for dioxin. The building was in excellent condition. A few drums of purge water from the ground water sampling were stored in

---

[1] The facility is now owned by DuCoa L.P. (DuCoa), a limited partnership between DuPont and Con Agra. DuCoa purchased the facility from Syntex in 1996.

this building as well as two drums of used oil from the forklifts and backhoes used in completing the excavation activities.

This completed the inspection for OU1. All activities as outlined in the 1988 Record of Decision were satisfactorily completed. I left the site at approximately 12:15 PM and returned to Kansas City that afternoon.

cc: Steve Kovac
Bob Feild